

ABSTRACT OF THE DISCLOSURE

A multiple-channel semiconductor device has fully or partially depleted quantum wells and is especially useful in ultra large scale integration devices, such as CMOSFETs. Multiple channel regions are provided on a substrate with a gate electrode formed on the uppermost channel region, separated by a gate oxide, for example. The vertical stacking of multiple channels and the gate electrode permit increased drive current in a semiconductor device without increasing the silicon area occupied by the device.